

## NOTES ON THE EGGS OF CORIXIDAE.

By H. B. HUNGERFORD, Professor of Entomology, Kansas University, Lawrence, Kansas.

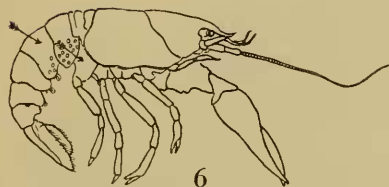
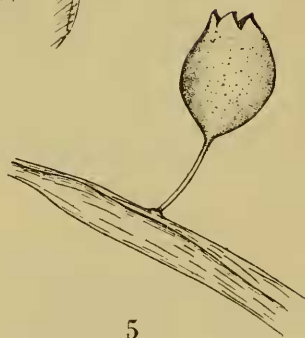
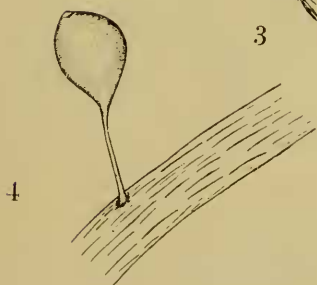
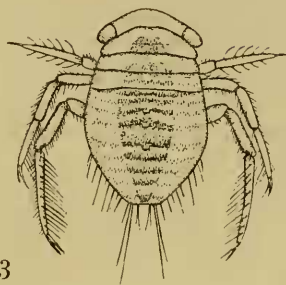
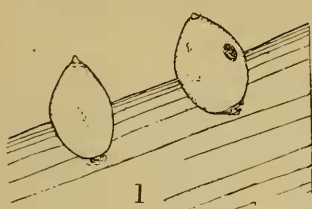
There is today, as there always has been, an active interest in the water and the life it supports. To those of us who conduct classes to the lake, pond, or stream for a survey of aquatic life, any contribution that helps to recognize the objects of our catch is indeed welcome.

This little paper is a report upon the various types of the eggs of the Corixidae as we know them in our North American waters. The nymphs resemble the adults sufficiently to be recognized by any one who is in the least familiar with the structure of the Boatmen. The inverted top-shaped eggs also are familiar objects to those accustomed to collecting in our fresh waters (Fig. 1). Sometimes they are found thickly covering every available support the water affords. Their astonishing numbers in the water is more nearly appreciated when we recall that they have been gathered by the Mexicans from reeds submerged for the purpose and utilized by them as food. This may be a food source not to the liking of our cultivated palates, but it is a convincing illustration of abundance. There are, on the other hand, a couple of corixids, the eggs of which are not so generally known. The first is *Ramphocorixa acuminata* (Uhler), the interesting oviposition habits of which have been reported hitherto, and the second is *Cymatia americana* Hussey, a recently described insect, whose egg is here reported for the first time.

*Ramphocorixa acuminata* (Uhl.) generally, but not exclusively, attaches its eggs to the body of a crayfish (see Plate I, Fig. 6). Dr. S. A. Forbes (1876) appears to be the first one to have found them, but Dr. J. F. Abbott (1912) was the first to fix the identity of the species possessing this curious habit. This latter author calls it a symbiotic relationship. There seems to be some justification in believing that the insect derives some benefit. When one gathers egg-bearing crayfish it is quite noticeable that the eggs occur upon the first and second abdominal pleurites more frequently than elsewhere. Especially is this to be seen when only a few eggs have been attached. The apparent explanation of this would be that there is a constant stream of water being drawn over these parts as the crustacean draws the water beneath the carapace. (See Fig. 6 and Fig. 7.)

*Cymatia americana* Hussey was described in this BULLETIN, Vol. XV, p. 80, from a pond near St. Paul, Minn. It was the first member of the genus *Cymatia* to be found in this country and has proved to be a most interesting form. Mr. Hussey gives an account of its remarkable mode of hibernation in Vol. XVI, pp. 131-136, of this BULLETIN. It may be recalled that he found the bugs to pass the winter sealed in small cavities in the ice, from 10 to 50 individuals tightly crowded in groups in each pocket. I had the pleasure of visiting the pond from which this species was taken many times during the summer of 1921. I found it fairly abundant, but not the dominant species of the pond as it had been a few seasons before. By early August it was not to be found in any part of the pond, although diligent search was made for it several times. The unprecedented hot summer appeared to have warmed the waters too much for its existence. Collections were made in a various number of water bodies with which the region abounds, but *Cymatia americana* was not taken. This species appears to be northern in distribution. Mr. Hussey reports specimens from North Dakota and I have specimens from Canada. It may be that the extreme heat of last summer has destroyed our little colony at St. Paul, Minn., for collectors report that they can not find it this summer.

I made one attempt to rear the species, but secured only the egg and first instar stages, which I deem worthy of reporting at this time (see Figs. 3-5). The eggs are quite interesting because they are attached by transparent stalks of considerable length like the eggs of *Porocorixa* in Australia reported just last year by Mr. Herbert M. Hale (Records of the South Australian Museum, Vol. 11, No. 2, Apr., 1922). Eggs laid June 20 showed faint pink ill-defined eye spots on June 25 and all hatched by June 30. The newly hatched bugs were not isolated and one morning I found one nymph that had caught another and midst the feeble protests of the unfortunate victim the captor was slowly sucking out its life blood. They were head to head, the beak of the diner pressed firmly against the forehead of the other. Under the binocular the process was observed and finally, the meal complete, the live bug endeavored to disengage itself, but its stylets held firmly and he swam about dragging the carcass of his brother. At this point I placed the pair in alcohol. Hussey had noted that this species appeared to be predaceous. The front palae are slender instead of broad and spoon-shaped like the common forms, the foraging habits



of which are quite different from other aquatic Hemiptera in that they ingest quantities of organic ooze and can readily be shown to eat pure cultures of *Spirogyra* and other algae. The descriptions of the egg and first instar nymph follow:

*Egg*.—The egg is pearly white when first laid and is anchored to some plant support by a long very slender glossy transparent stalk. The base of the stalk is attached to its support by a small characteristic pad of gelatinous substance. The entire clear flexible stalk appears to be made of the same substance. The egg itself is much like that of any other corixid—asymmetrical with a clear nipple-like apex. In hatching the free end peels back in five or six sections like any other. (See Figs. 4 and 5.) The egg, stalk and all, is about three times as long as wide. The egg and stalk are about equal in length, each being .8 or .9 mm., and the width of the egg about .6 mm.

*First Instar Nymph* (see Fig. 3) measures about 1.7 mm. long and .9 mm. across the head. The insect is transparent with red eyes when first out of the shell, but becomes somewhat pigmented shortly. The beak is like that of other corixid nymphs and the tarsi are all one segmented, the shape of the front ones much like those of the other legs. The front leg ends in a single claw, while the middle and hind legs are terminated by two long slender claws of equal size and length.

#### EXPLANATION OF PLATE I.

FIG. 1. Egg of a common boatman, showing the increase in size as embryo develops within.

FIG. 2. Shows stages in the emergence of a nymph: *a*, the bubble like inflated membrane of the post natal molt; *b*, the vertex of the embryo. The second drawings show the embryo after it has advanced into the inflated bubble and the figure on the right the abandoned egg shell and post natal molt.

FIG. 3. First instar nymph of *Cymatia americana* Hussey.

FIG. 4. A newly laid egg of *Cymatia americana* Hussey.

FIG. 5. The same egg after the escape of the nymph.

FIG. 6. Crayfish with eggs on first and second abdominal pleurites. The arrows indicate direction of water current.

FIG. 7. One of the *R. acuminata* Uhl. eggs from Fig. 6 enlarged and reticulate surface shown (any corixid egg shows reticulation if studied carefully).